4-25-1988

Radar Actuated Cruise Control (RACC)

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RACC
Radar Actuated
Cruise Control

Final Report

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April 25, 1988

IPFW EET DEPARTMENT

EET 491

Abstract

Current models of automotive cruise controls allow for constant speed control when set by the driver. The systems have been perfected by the Dana Corporation and are in use as standard equipment or add-on kits in many cars today. These cruise control systems help the driver by operating the gas peddle and tend to relieve the fatigue often experienced on long distance trips. The best conditions for cruise controls occur in interstate or open lane driving where the driver can freely pass slower vehicles. There is a serious problem, however, when driving on two-lane, heavy traffic roads. The cruise control cannot sense impending collisions and must therefore be manually overridden to avoid accidents. Many cruise control owners can relate to the frustration of following behind cars which do not have cruise controls and thus exhibit erratic speeds. This brings about the need to extend the capabilities of the standard cruise control, giving it the ability to sense traffic speed and automatically adjust to it.

The purpose of this project, the Radar Actuated Cruise Control (RACC), is to develop a system which can use radar signals to measure the distance between the cruise controlled vehicle and the preceding traffic, and to adjust the throttle setting to match the speed of the traffic at a constant distance. The RACC will be designed as an "add-on" to existing cruise control systems and will use the facilities thereof. Recent revisions in the design of the RACC system during this Senior Design period has decreased the complexity and material requirements, yielding a reasonably priced system which can integrate with virtually any cruise control device. The addition of the RACC system will make travelling by cruise control even more pleasurable by taking over in conditions that used to be impractical and unsafe. The RACC will also improve vehicular safety by allowing the driver to maintain safe following distances over a range of speeds.

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